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EXAMINER

ORTIZ, E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 07/10/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/343,293

Applicant(s)
Cheng Et.al.

Examiner
Edgardo Ortiz

Group Art Unit
2815



☒ Responsive to communication(s) filed on May 1, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 18-24 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 18-24 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

This Office Action is in response to an amendment filed May 1, 2000 on which Claim 18 was amended and new Claims 21-24.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-20 are rejected under U.S.C. 103 (a) as being anticipated by Kimura (U.S. Patent No. 5,883,418) in view of Xiang et.al. (U.S. Patent No. 5,937,315). Kimura discloses a semiconductor device with particular silicide structure. With regard to Claims 1 and 21, Kimura teaches a gate electrode (5) having sidewalls (9), a silicidation barrier (26) adjacent the sidewalls (9), a silicide layer (15b) adjacent to the gate electrode (5), a pair of source/drain terminals (6) self aligned to the gate electrode (5), wherein the source/drain terminals (6) comprise a first implanted region (7a), second silicide layer (16a), second implanted region (14a) and a third silicide layer (16b). See column 7, lines 1-51.

With regard to Claim 19, Kimura teaches a second silicide layer (16a) is contained within the first implanted region (7a). See column 7, lines 1-51 and Figure 1.

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With regard to Claim 20, Kimura teaches silicide layers (40, 41) thicker than each of the silicide layers (16a, 16b), thus it would have been an obvious modification to the structure to provide a silicide layer thicker than the first implanted region. The thicknesses of the silicide layers are considered to have been obvious to someone with ordinary skill in the art at the time of the invention, since variables of art of recognized importance which are subject to routine experimentation, optimization and discovery of an optimum value for a known process and changes in size or range are obvious.

With regard to Claims 22 and 23, Kimura teaches silicide portions comprising cobalt silicide and titanium silicide. See column 9, lines 4-7.

However, Kimura does not teach source and drain regions having first and second silicide layers on each region. Xiang discloses a self-aligned silicide gate technology for advanced submicron MOS devices. With regard to Claim 21, Xiang teaches nickel silicide layers on source and drain regions which provide thin silicide films with relatively low sheet resistance and low contact resistance.

With regard to Claim 24, Xiang teaches silicide layers comprising nickel silicide. See column 5, lines 5-8.

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Thus, it would have been obvious to someone with ordinary skill in the art to combine the teachings of Kimura and Xiang in order to provide a semiconductor device which two silicide layers that can be made from the same or different materials and provide relatively low sheet resistance and low contact resistance.

Response to Arguments


2. Applicant's arguments with respect to claims 18-20 have been considered but are moot in view of the new ground(s) of rejection.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Edgardo Ortiz (Art Unit 2815), whose telephone number is (703) 308-6183. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 receptionist whose telephone number is (703) 308-0956.

EO / AU 2815

6/30/00



DAVID HARDY
PRIMARY EXAMINER